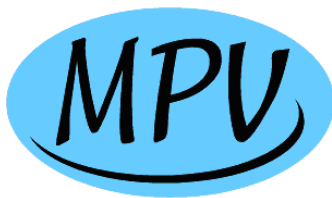


Matti Vuori

List of some usual things to test in an application

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1. Background

System testing and as part of it functional testing can be based on the specification of an application and test cases derived from that, or on agile exploratory testing. On both approaches one needs generic understanding of how applications can work and what can go wrong in using them.

An example of this is the understanding that if files are saved from an application, it needs to succeed. And there can be some situations when that might not be obvious and the tester needs to test those to be sure that they happen correctly. Correctness in this case means that the data is saved properly and if not, the user does not erroneously believe that the saving succeeded. Therefore, common problems need to be tested: using UNC addresses, out of disk space, space character in filename, behaviour when a file with the same name exists, etc...

This is testing style which is based on the application's implemented functionality and which may be performed guided by generic principles:

- Test the whole lifecycle of applications usage
- Test all functions in normal situations: Input of data – Editing – Saving – Printing etc....
- Test all system / computer configurations
- Identify all possibilities of human error
- Identify possibilities of system failures and deviations
- Test all special cases of all functions

Such things to test related to common application functionality are included in this document.

Using a list like this it is possible to create a mode or working, where the list replaces detailed test design, yet allows demonstration to a customer of what the tester aims to test during the next week's test period. Of course, the tester must have the necessary skills for this kind of testing.

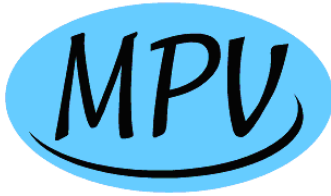
2. Purpose of the list

In situations where there are no specification to guide testing, the list can be used to choose general things to test. **The list is not comprehensive, but merely gives guidance to the start to testing.** Starting is sometimes difficult – hopefully this help in that.

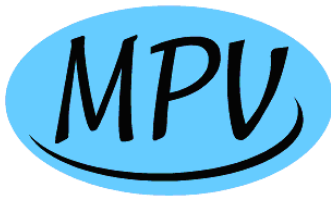
Don't be a slave of the list – just use it as a tool that gives you ideas.

The list can also be used for choosing things to test in a situation where the application is an implementation of some "standard" concept, in which case it makes no sense to even define all application features.

The list can be used to kick start agile testing with some usual tests and then continue from there, where the observations take you.



Similar lists are sometimes used to describe basic testing required from an application used in a platform. For example, the manufacturer of a mobile platform can require passing of certain tests. Only after that may the application be digitally signed and it is allowed to be sold in the web stores of the manufacturer and its partners.



**Not a complete list – just
starting points to get
testing going**

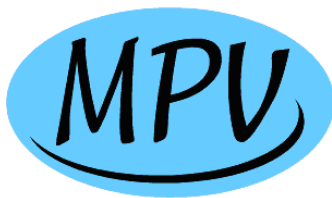
3. Taking it into use

3.1 Check the delivered package

Test case	Acceptance criteria
Delivery package includes	
• Media	Exists and is appropriate
• Installation instructions	Exists and is appropriate
• Instructions for use	Exists and is appropriate
• License	Exists and is appropriate
• Information of product support	Exists and is appropriate

3.2 Installing the application

Test case	Acceptance criteria
Installation with default values	Succeeds without errors or error messages
Installation with changed parameters	
• Too restricted user rights	Error message at the beginning of installation
• Installation to different disk than default	Succeeds
• Installation to network drive	Works unless specified otherwise
• Installation to USB disk	Works unless specified otherwise
• Installation to UNC-path with not drive letter	Install succeeds and program works
• Installation path contains spaces	Install succeeds and program works
• Not enough free disk space	Installation is not even started
Installation from various install packages and in various ways	<ul style="list-style-type: none">• All packages work• Installation from net works using different variations in the procedure



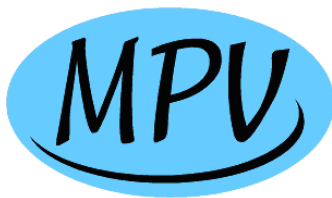
4. Using it

4.1 Starting the application

Test case	Acceptance criteria
Application starts with all starting methods that it has been installed for: <ul style="list-style-type: none">• Application menu• Desktop• Task bar	<ul style="list-style-type: none">• All work• All work the same way
Starting by directly running the executable in its folder or by a self-made shortcut	<ul style="list-style-type: none">• Starts in a "normal" way
History information	
<ul style="list-style-type: none">• Is the history from previous runs shown properly (if it should), for example, previous files	<ul style="list-style-type: none">• Previously used files are shown and work correctly
<ul style="list-style-type: none">• Is the history for other users displayed	<ul style="list-style-type: none">• Usually should not be displayed

4.2 User functions

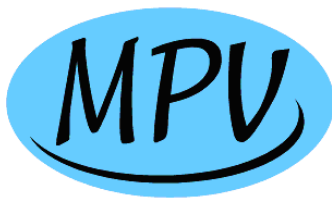
Test case	Acceptance criteria
4.2.1 Logging in to application / service	
Logging in with nonexistent / wrong username or password	<ul style="list-style-type: none">• Does not succeed• User or application is not locked unnecessarily soon
Requesting new password to email	Works
Logging in with nonexistent / wrong username or password after having logged in correctly	<ul style="list-style-type: none">• Does not succeed• The previous session closes – user is logged out
Testing of all user classes, roles	Logging in succeeds for all roles (from head user to all classes for regular users)



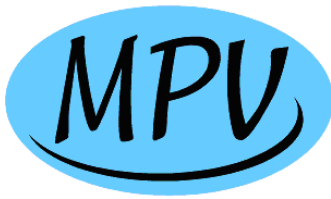
Test case	Acceptance criteria
4.2.2 Logging off the service	
User logs off	<ul style="list-style-type: none"> • Session is closed • All user identification information is removed from screens • Back button does not take to the previous displays

4.3 Handling of files

Test case	Acceptance criteria
4.3.1 Open an existing file	
User open a file	File opens correctly
Special cases	
• User opens many files	All files open (if this is not possible, the application should be able to select many files)
• Filename contains space or accented characters (ä, ö, etc.)	File opens
• Directories with spaces	File opens
• Open a nonexistent files	• Clear error message
• Opening a file with wrong (non-supported) format: 1) Wrong suffix and format; 2) Correct suffix, but wrong format	Clear error message, nothing loaded
• Opening a very large file	<ul style="list-style-type: none"> • Application does not crash • Error message • Information to user about progress of the loading if it takes long (program must not get "frozen")
• Opening a faulty file: 1) Corrupted file, 2) Size of file = 0	Clear error message, nothing loaded
• Open from all drives, including USB drive	File opens



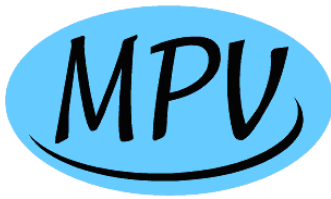
Test case	Acceptance criteria
4.3.2 Opening files of all supported formats	
User opens a file in each supported format, one at a time	<ul style="list-style-type: none"> • All files open correctly • Files convert to application's format correctly
4.3.3 Saving files	
User saves files	<ul style="list-style-type: none"> • File saved correctly
Application is closed and the just saved file is opened	<ul style="list-style-type: none"> • File opens correctly
Save over an existing file	<ul style="list-style-type: none"> • Usually application checks overwriting and asks permission to overwrite
Special cases	
<ul style="list-style-type: none"> • Saving a locked files (used by someone else) 	<ul style="list-style-type: none"> • Error message
<ul style="list-style-type: none"> • Close an edited document, when disk file is locked 	<ul style="list-style-type: none"> • Error message • Document is not closed without saving
<ul style="list-style-type: none"> • Saving to a drive which is full 	<ul style="list-style-type: none"> • Error message
<ul style="list-style-type: none"> • Empty files 	<ul style="list-style-type: none"> • Saves ok
<ul style="list-style-type: none"> • No writing rights to target directory 	<ul style="list-style-type: none"> • Error message
<ul style="list-style-type: none"> • UNC path 	<ul style="list-style-type: none"> • Saves ok
<ul style="list-style-type: none"> • Opening and saving between different directories 	<ul style="list-style-type: none"> • Does the program keep in synch • Do the documents remember their directories (Save and Save As)
Saving in all supported formats:	
<ul style="list-style-type: none"> • Save in all supported formats and open again 	<ul style="list-style-type: none"> • File saved correctly • Files size does not expand unexpectedly • File opens correctly
<ul style="list-style-type: none"> • Open the saved files in other relevant application (like a word processor, images in a browser or a photo editor) that the potential uses might also use 	<ul style="list-style-type: none"> • Files open correctly
4.3.4 Simultaneous handling of an open file from elsewhere	
Open file is edited with another application	<ul style="list-style-type: none"> • Text editors are expected to noticed, when gaining focus, that the file has been edited and to ask about loading the edited version from disk



Test case	Acceptance criteria
Delete an opened file on disk	<ul style="list-style-type: none">• Does it succeed• Does the application react as expected (for example ask if the files should be closed)• Does it hinder the application

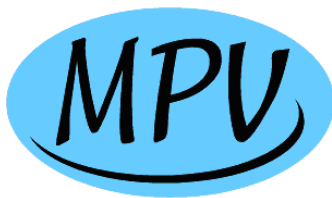
4.4 Displays

Test case	Acceptance criteria
4.4.1 Are displays based on standards	
Are displays based on standards	<ul style="list-style-type: none">• Are displays and graphics based on company style guide, graphics manual* Do displays and graphics meet the operating system standards
4.4.2 Consistency of the user interface	
Consistency of graphics.	All graphics, icons and symbols are similar in different parts of the app
Consistency of layout.	<ul style="list-style-type: none">• All displays have similar basic structure• Basic elements are located at the same place and work in the same way (like pushbuttons)
Flawless visual implementation	Graphics are flawless in program parts of the program and in all displays: windows, icons, pushbuttons...
4.4.3 State of controls	
State of display, menus, icons and push buttons	Only the controls are active that can be used in the current state of the application
<ul style="list-style-type: none">• When nothing is opened	Only application level functions work
<ul style="list-style-type: none">• In other situations	Does the state of controls follow the context, state of the application

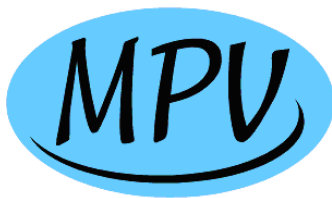


4.5 Interactive data processing

Test case	Acceptance criteria
4.5.1 Displays	
How UI functions match specification of user manual	All promised functions exist
Working of all functions	<ul style="list-style-type: none"> • All functions work as promised or as expected • All functions not specified are logical or based on standards or common practice
Working of all push buttons	All push buttons work
Working of cancel function	Cancel works in all displays (where appropriate)
4.5.2 Inputting records to a database	
Insert a new record	Succeeds
Cancel data entry	Returning from the entry screen without saving succeeds
Input a new record, but the same record (same data) already exists	<ul style="list-style-type: none"> • Error message • Confirm replacement of the old record
Input an empty record	Not accepted
Deleting a record	<ul style="list-style-type: none"> • Does it succeed • Confirmation of delete • Cancelling of delete
4.5.3 Field inputs	
Empty field	<ul style="list-style-type: none"> • Application required those field that have been marked as mandatory • Other fields are accepted as empty • Application requires "obvious" key fields • Empty field do not cause problems for application
Long inputs – large number of data from the clipboard	<ul style="list-style-type: none"> • Application accepts the long input • Application clips the input but informs the user about it • Application will not crash
Wrong formats:	



Test case	Acceptance criteria
• Letters instead of numbers	<ul style="list-style-type: none"> • App informs of erroneous input and lets user correct it • App must not accept input as invalid number (0, -1)
• Date separators. Use of wrong separator.	App either accepts input or informs of wrong input and explains the correct format
• Nonexistent date (48.13.2003)	App does not accept; lets user correct input
• Order of date fields is wrong	App may recognize a clearly wrong order, but it is better to inform the user
• An illogical date: a happened thing is given a date in the future	• App must not accept and at least give an error message
• Currency separators	<ul style="list-style-type: none"> • App interprets separators correctly • Error message • Inputted data can be checked for correctness after the actual entry form
• Separators on numbers, formatting of numbers	• App understands spaces, decimal separators etc.
Inputting code	
• HTML	If application accepts HTML, it handles "common" markup correctly but refuses dangerous code
• Skriptis	Javaskriptiä tai muita skriptikieliä ei yleensä sallita
• SQL	SQL:ää ei sallita
4.5.4 Undo	
Working of Undo function	<ul style="list-style-type: none"> • Works in all forms • Works in all editing situations
4.5.5 Clipboard	
Data can be transferred via clipboard to other apps. A relevant one is usually Word.	<ul style="list-style-type: none"> • Data is transferred (e.g. ASCII-text) • Typography may change, if it is easy to correct
Application can input data from another application via clipboard (for example from Word)	<ul style="list-style-type: none"> • Data is transferred (e.g. ASCII-text) • Typography may change, if it is easy to correct
Working of all clipboard formats	• All clipboard format work as promised of expected
Clipboard works in dialogs	• Especially in fields where the users might copy information from another document



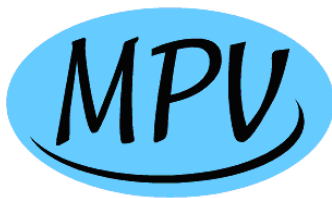
Test case	Acceptance criteria
Paste very large amount of data	<ul style="list-style-type: none">• Succeeds• Fails, but gives an error message. App must not crash
Copying of images	<ul style="list-style-type: none">• Quality of raster images is expected• Vector images are scalable in target and sometimes modifiable, if reasonable to expect
4.5.6 Simultaneous use	
Two users edit the same file or record	<ul style="list-style-type: none">• Correct synchronization of saving, informing of a change file and other users• Speed of synchronizing is sufficient

4.6 Time-related functions

Test case	Acceptance criteria
Correct working of time zones	<ul style="list-style-type: none">• Time zone selections affect time as expected• Same data shows correctly when accessed from different time zones (think of countries)
Working of timed functions	Timed functions, such as reminders, happen at correct time
Time shown in different functions	<ul style="list-style-type: none">• Time is correct in all displays• Time is correct in exporting and publishing data (calendar data, RSS feeds etc.) and shows correctly in the target

4.7 Social media functions

Test case	Acceptance criteria
Sharing an item	Item is shared in correct form (information, visual appearance etc.)
Try posting the same thing multiple times ("did it go yet?")	Duplicates are not posted

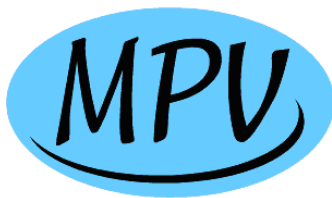


4.8 Search / query

Test case	Acceptance criteria
Search with a trivial, correct criteria	<ul style="list-style-type: none">• Correct set of finds
Empty search	<ul style="list-style-type: none">• Error message, or• Return all records
SQL used in query	<ul style="list-style-type: none">• Error message – must not be allowed, for security
Use of wildcards	<ul style="list-style-type: none">• Work as expected (e.g. require*)
Use of Boolean algebra	<ul style="list-style-type: none">• AND, OR work as expected
Regular expressions	Work correctly
Ordering of lists in the locale	Letters are ordered correctly (for example ä in Finnish is ordered based on where it is located in Finnish alphabet)

4.9 Printing

Test case	Acceptance criteria
Printing with defaults	<ul style="list-style-type: none">• Printing works as expected• Content is correct• Positioning in form fields is expected• Data is not clipped• WYSIWYG printing is WYSIWYG
Using different printers	<ul style="list-style-type: none">• Changing printer succeeds• App remembers the new printer during the session
Special cases:	
<ul style="list-style-type: none">• All printing options	All relevant options work
<ul style="list-style-type: none">• Printing with different page sizes	<ul style="list-style-type: none">• Succeeds• Scaling and positioning as expected
<ul style="list-style-type: none">• Printing to file	Succeeds
<ul style="list-style-type: none">• Printing to PDF with a PDF printer	<ul style="list-style-type: none">• PDF is flawless• PDF is in vector format (text can be selected)
Special printing-friendly version of a page	Contains all expected information
Black and white printing	All elements are visible and differentiate from each other

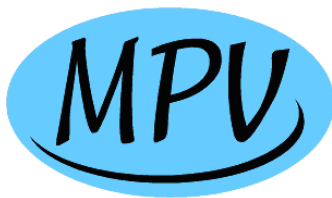


4.10 Using online help

Test case	Acceptance criteria
Try all help function	<ul style="list-style-type: none">• All help functions work• All links work (for example links to a support site)
Online help opens:	
<ul style="list-style-type: none">• From help menu	Help opens
<ul style="list-style-type: none">• With a function key (e.g. F1)	<ul style="list-style-type: none">• Help opens• Context is correct
<ul style="list-style-type: none">• Buttons in forms (like ?-button)	<ul style="list-style-type: none">• Help opens• Context is correct
<ul style="list-style-type: none">• Using offline	Works
Search tools in help:	
<ul style="list-style-type: none">• Freeform search	Works

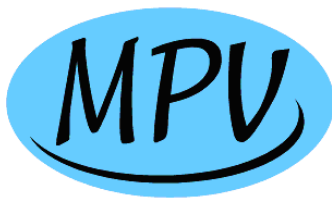
4.11 Closing the application

Test case	Acceptance criteria
App closes using all normal ways, all ways the user interface provides <ul style="list-style-type: none">• File menu• Closing button in application window• Application system menu• Shortcut key (like Ctrl+W)• Closing controls in forms	<ul style="list-style-type: none">• All ways work in similar way• Session data is saved (like recent files, open data)
Closing the program when there are open documents	App asks about saving data (exception: web applications, many mobile applications)
Closing the program when the computer is shut down	<ul style="list-style-type: none">• App closes• Session data is saved• App warns about unsaved data



4.12 Maintenance functions

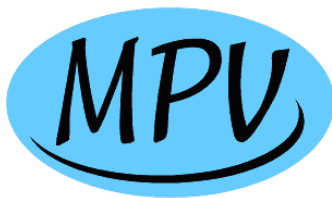
Test case	Acceptance criteria
4.12.1 Changing settings	
Changing the normal configuration settings that adjust how the application works and displays data	<ul style="list-style-type: none"> • Succeeds • New setting come into effect immediately • Come into effect after restart if the application tells so
4.12.2 Changing user information	
Changing user name / ID	Succeeds
Changing email address	<ul style="list-style-type: none"> • Succeeds • Old email is not required for the process
Changing password	<ul style="list-style-type: none"> • Succeeds • Password is not sent by email
Changing user group for the user	(Usually requires administrator rights to change)
4.12.3 User maintenance	
Adding a new user	<ul style="list-style-type: none"> • Succeeds, if user has the necessary rights (admin, manager) • Does not succeed, if the user does not have the necessary rights
Removing a user	<ul style="list-style-type: none"> • Succeeds, if user has the necessary rights (admin, manager) • Does not succeed, if the user does not have the necessary rights
Removal of self	If user has own data, removal of those should often be possible
Listing of users	Succeeds
4.12.4 Backup and restore	
Making a backup	<ul style="list-style-type: none"> • Succeeds • Contents of the backup depend on user role (only full backups for an admin)
Restoring a backup	Succeeds
4.12.5 Other maintenance	
Opening of locked documents	Succeeds (e.g. deleting a lock file)



Test case	Acceptance criteria
4.12.6 Updating the application	
Normal update	<ul style="list-style-type: none">• Succeeds as expected• User's settings and data remain as they were
Update is interrupted at its loading phase (network update)	<ul style="list-style-type: none">• Old version still works• Update can be restarted

4.13 Working of the application in various system situations

Test case	Acceptance criteria
4.13.1 Desktop app	
Disk space runs out before program starts	App warns about it
Disk space runs out during use	<ul style="list-style-type: none">• App warns about it• Saving of files always succeeds
Very large number of files in TEMP directory	App works correctly
TEMP directory is located on a disk that is full	<ul style="list-style-type: none">• App warns about it• App can handle the situation
Computer runs out of memory	<ul style="list-style-type: none">• App doesn't crash• App closes itself in controlled manner
Network connection closes	<ul style="list-style-type: none">• Application works and doesn't freeze• App allows saving data locally
Pull the electric plug off the wall	<ul style="list-style-type: none">• App starts normally after the computer has rebooted• Files are not corrupted• If the program makes backup saves, such saved document is easy to find and restore
Close the program by force using the operating system's Task Manager	<ul style="list-style-type: none">• App closes• App starts again normally
Computer is restored from a sleep state	<ul style="list-style-type: none">• Application works normally• Network connection and other computer resources (such as camera and USB devices) are restored as expected



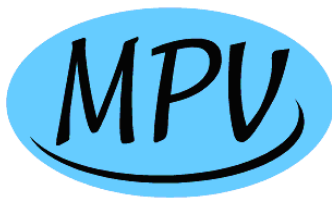
Test case	Acceptance criteria
4.13.2 Web based service	
Heavy load (from other users)	<ul style="list-style-type: none">• Service works• No timeouts• Delays reasonable

4.14 Removing the program from the computer

Test case	Acceptance criteria
Finding a way to uninstall	<ul style="list-style-type: none">• App has installed an uninstall tool or function in the computer• The uninstaller is found easily
Executing the uninstall function	Uninstall is confirmed
	Uninstall works
Completeness of uninstall	All files installed by this application are removed
	User created files are not deleted
	Operating system files are not removed
	Files belonging to other apps are not removed
	App has removed its information from the operating system registry OR old setup data is retained, if user so wishes
	Shortcuts on desktop etc. are removed

5. Testing with different system configurations

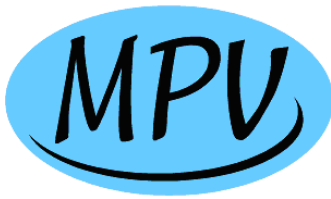
Test case	Acceptance criteria
5.1 Desktop app	
Test installation and function for the most important operating systems for the target user group	
<ul style="list-style-type: none">• Home users: Home versions of Windows	Works
<ul style="list-style-type: none">• Company users: Professional versions of Windows	Works



Test case	Acceptance criteria
• With Linux, relevant distros and their versions. For example with Ubuntu the latest version and at least the current long term support version	Works
• OS with various locale & language settings	Works
Working with varying user rights:	
• User with no admin rights	Works
5.2 Web application	
Using with different web browsers.	Works
Turn JavaScript support off	<ul style="list-style-type: none"> • Business applications should work without JavaScript • App should inform of need for Java Script
Working with different versions of Java (if requires Java)	Works
Working with the browser's high security settings	<ul style="list-style-type: none"> • Business apps need to work with the high security settings • App must inform of the restrictions
Working with low display resolutions (laptop, mobile phone)	<ul style="list-style-type: none"> • Works • Buttons do not get moved off-screen • Display can be scrolled
General working with small displays	• Works
Working with big OS font sizes	• Works
Working with big browser font sizes	<ul style="list-style-type: none"> • Works • Form layout don't change so that they would get confusing
Using the service with slow connections	<ul style="list-style-type: none"> • Works • No timeouts • Delays are reasonable

6. Special characteristics and requirements of the platform

Test case	Acceptance criteria
Test according to the testing requirements of the application store	All tests pass
Test against platform owner's design guidelines	All tests pass



Test case	Acceptance criteria
Test for the known problems that applications on the platform often have	This application does not have those problems
Test for known problems in the key technologies utilized	This application does not have those problems

7. Comparison between implementation and specifications

Test case	Acceptance criteria
Check how the tested application conforms with available specifications:	(Level of conformance)
• Requirement specification	
• Functional specification	
• Technical specification	
• User interface specification	
• User interface style guide	
• User manual	
• Brochure	
• Development contract or order	
• Other documents	